Indian Institute of Technology Kanpur
National Programme on Technology Enhanced Learning (NPTEL)
Course Title
Marketing Management – 1

Lecture: W4-L1
Capturing Marketing Insights

by
Prof. Jayanta Chatterjee
Dr. Shashi Shekhar Mishra
Dept. of Industrial Management and Engineering
I.I.T. Kanpur

Dr. Shashi Shekhar Mishra: Hello and welcome to our course titled marketing management -1.

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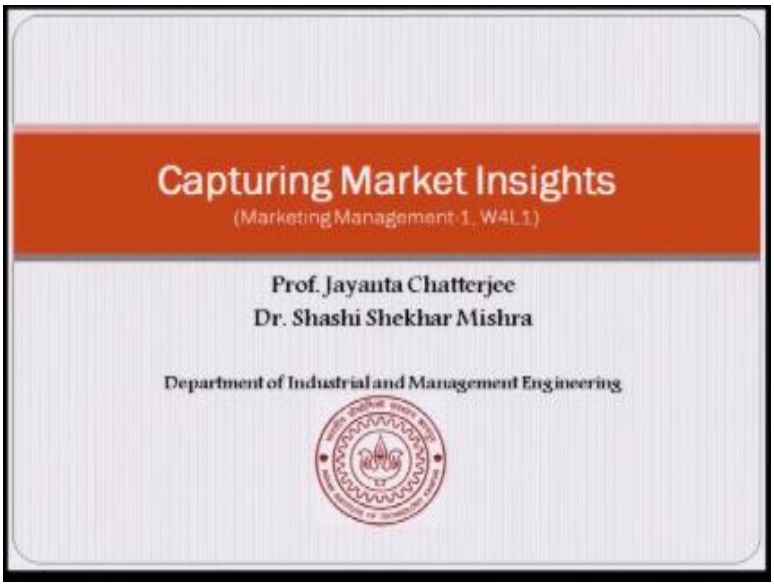

Dr. Shashi Shekhar Mishra: I am Shashi Shekhar Mishra from Department of Industrial and Management Engineering, we are in the third module of this course that is on capturing market insights and we will be covering this module in two weeks. So we have already completed the first week that is week three where we have talked about the marketing research process.

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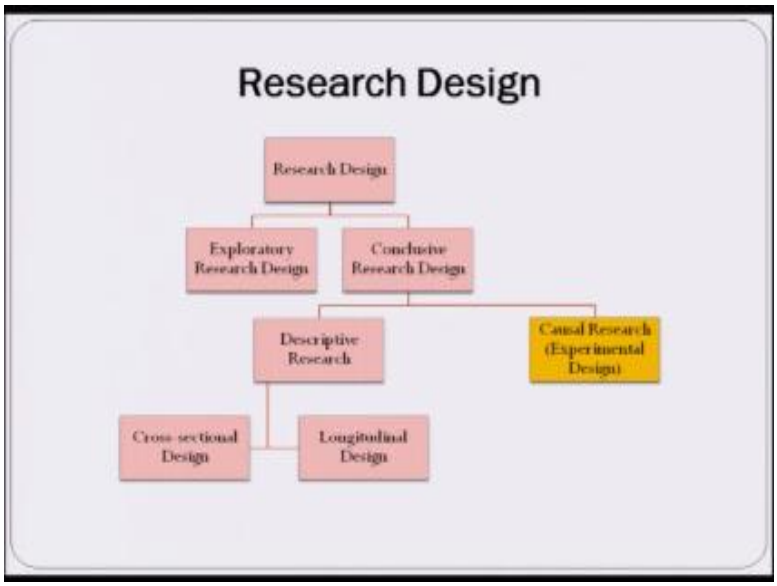

Dr. Shashi Shekhar Mishra: The various stages of marketing research process, the phases of in the marketing research process and then we started talking about developing the research plan or the research design. So in the last week we talked about the acceleratory research design and the different techniques that are used in exploratory research designs so we talked about direct exploratory research, indirect exploratory research, and the direct exploratory research we talked about.

Focus group research, we talked about in-depth interviews, we talked about ethnography, we talked about content analysis, user-generated content analysis. So, and then we also talked about some of the projective techniques which comes under the indirect exploratory research design method. Now today I am going to talk about conclusive research design and specific in this conclusive research design. I will be talking about causal research.

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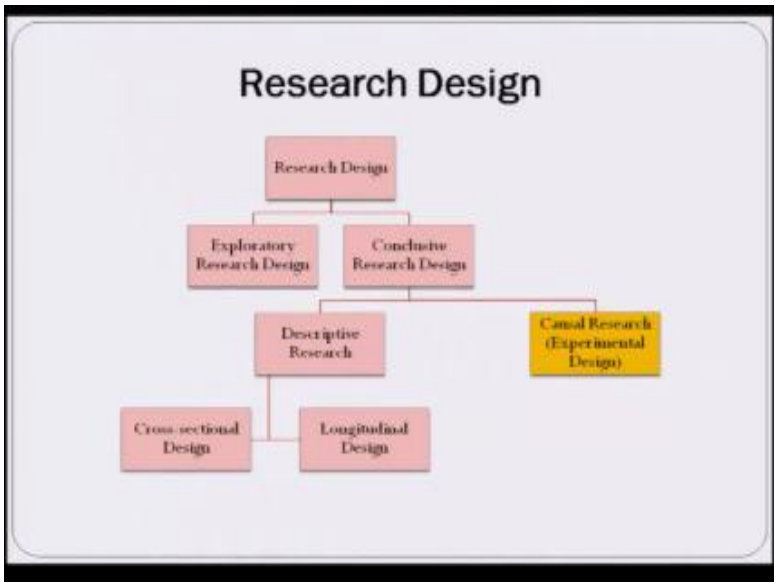

Dr. Shashi Shekhar Mishra: That is experimental design.

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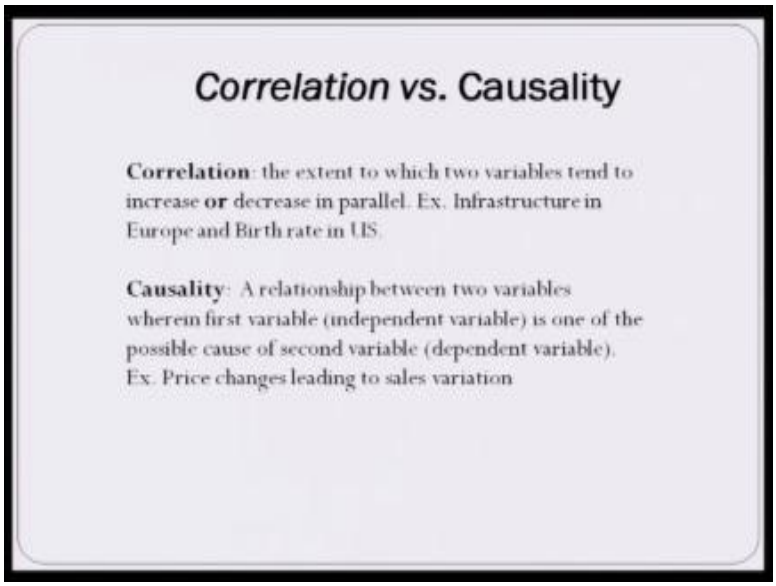

Dr. Shashi Shekhar Mishra: Causal research or in experiment design, one of the basic concept is, is the concept of causality. However it is very important for us to understand the difference between causality or correlation and the causality. Many a times we tend to get confused in terms of correlation as causality however the two are different concepts. So as displayed in the slides you can see.

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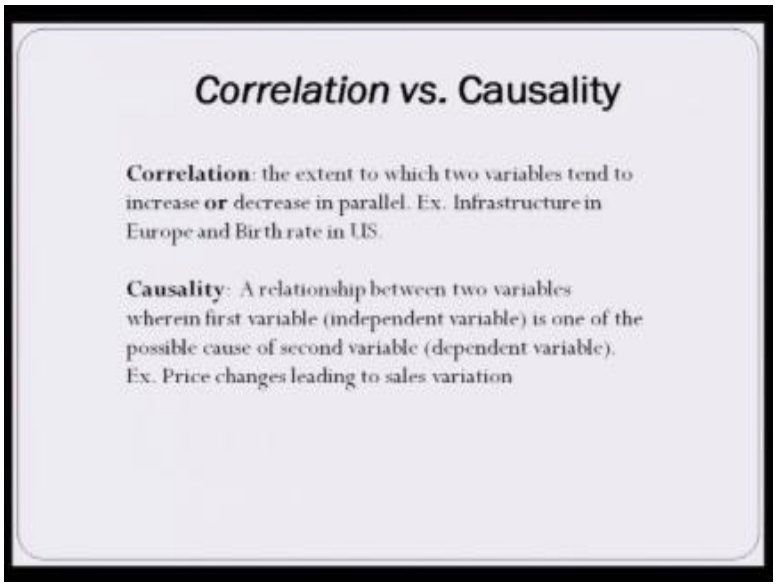

Dr. Shashi Shekhar Mishra: Correlation is the extent to which two variables tend to increase or decrease in parallel, as I have given you an example like at some point of time there was a rapid growth, rapid growth in the infrastructure particularly in the road infrastructure in the Europe and at the same time there was a growth in the birth of the child in the US. So these two things were increasing at on a similar basis.

I mean there was a basically a what do you say is correlation or there was a association between the movement of two. So however you can understand that building of the roads was not responsible for the birth rate in the United States, generally what happens in the case of correlation, there is some third variable, which is leading to both of these variables to move in a particular fashion.

So in this case since the, there was a economic boom in the both the region, so because of the economic growth both infrastructure development and since the income levels were high because of the economic prosperity, people who were planning for their families more often than probably in previous time. So you can say here the two variables are correlated but one is not the cause of the other. On the other side look at the definition of the causality.

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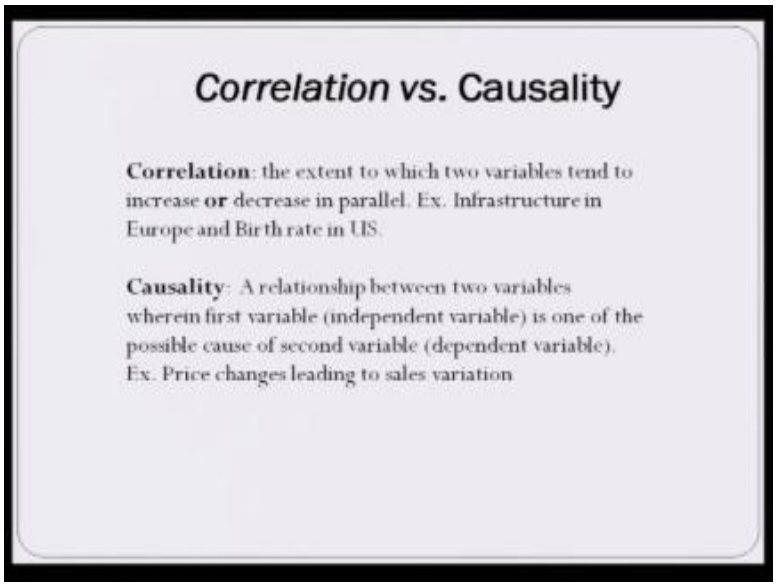

Dr. Shashi Shekhar Mishra: Causality talks about a relationship between two variables wherein the first variable that is the independent variable is one of the possible cause of the second variable, that is called the dependent variable. So the cause and the effect relationship exists between the two variable, the cause is termed or quite often as independent variable and the effect is called the dependent variable. Like I have shown it in this, in this example in the slide.

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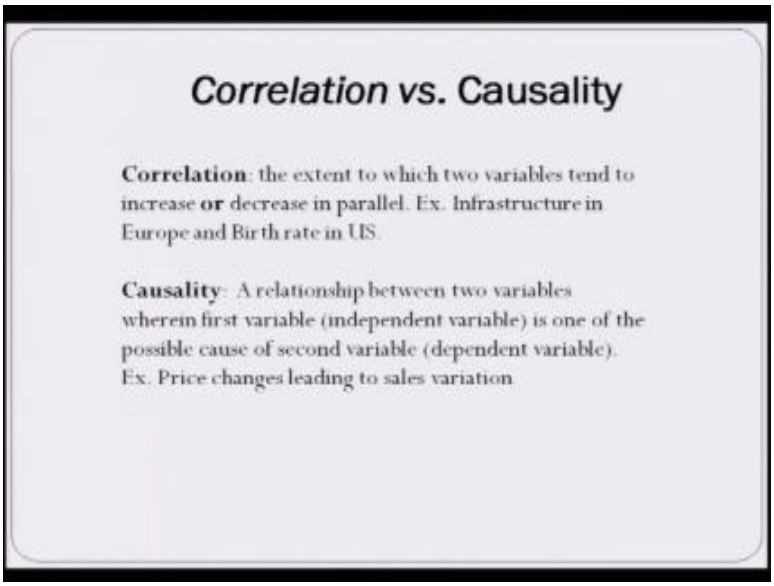

Dr. Shashi Shekhar Mishra: Like that as you increase the price you will see that sales of a commodity goes down so that is a sort of causal relationship.

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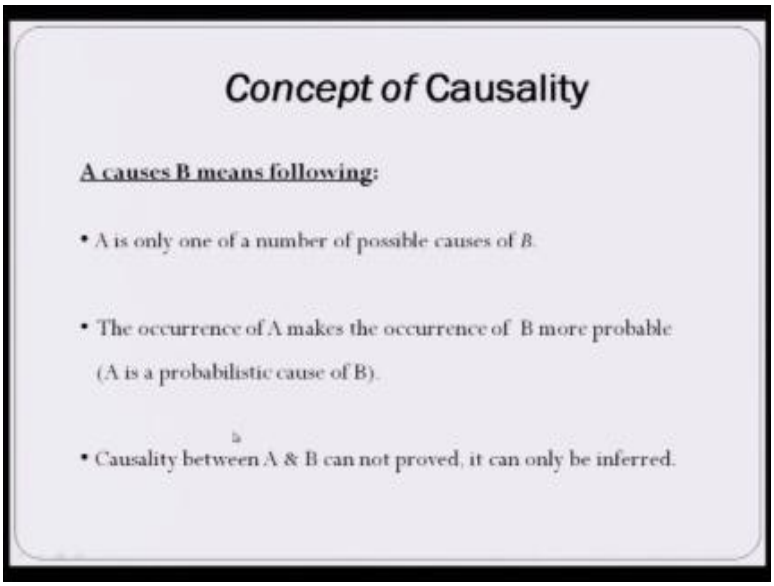

Dr. Shashi Shekhar Mishra: When we say in marketing research that A causes B what does that mean actually? It means actually three things. A is when we say that A causes B that means A is only one of the possible cause of B. So there can be other causes that could also lead to B other than A, then the occurrence of A makes the occurrence of B more probable. So the thing is that it is a basically a probabilistic thing.

That occurrence of B increases that the chances of the occurrence of the B, however it is not deterministic that the occurrence of A will necessarily lead to occurrence of B, then we have the third thing with that we can infer in this causal relationship is that.

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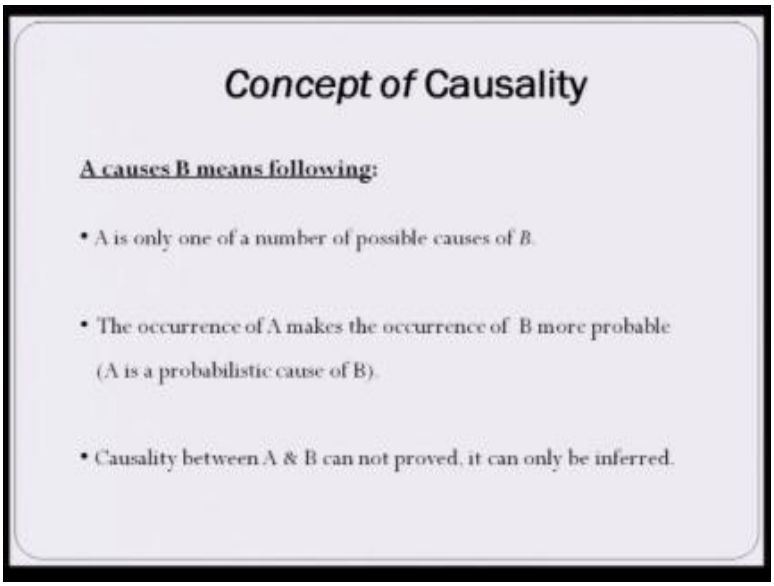

Dr. Shashi Shekhar Mishra: Causality between A to B cannot be proved it can only be inferred, that A leads to B.

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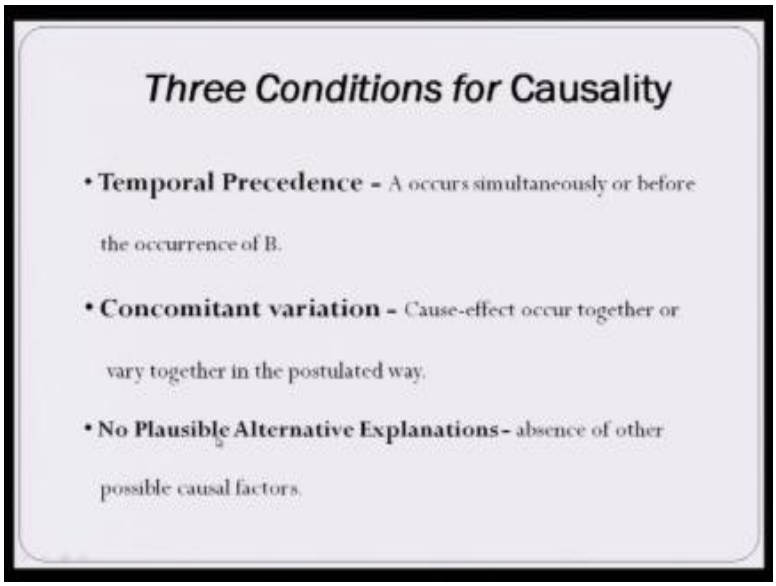

Dr. Shashi Shekhar Mishra: So there are three conditions for causality to be inferred, that is temporal precedence that, that the cause that I have represented relationship is A as a cause and B as a effect. So A occurs simultaneously or before the occurrence of B. So that is called as temporal precedence that, that A will either occur before B or it will occur simultaneously to B, however it cannot happen after B. So that is what the temporal precedence is that time precedence is, the second condition for causality is.

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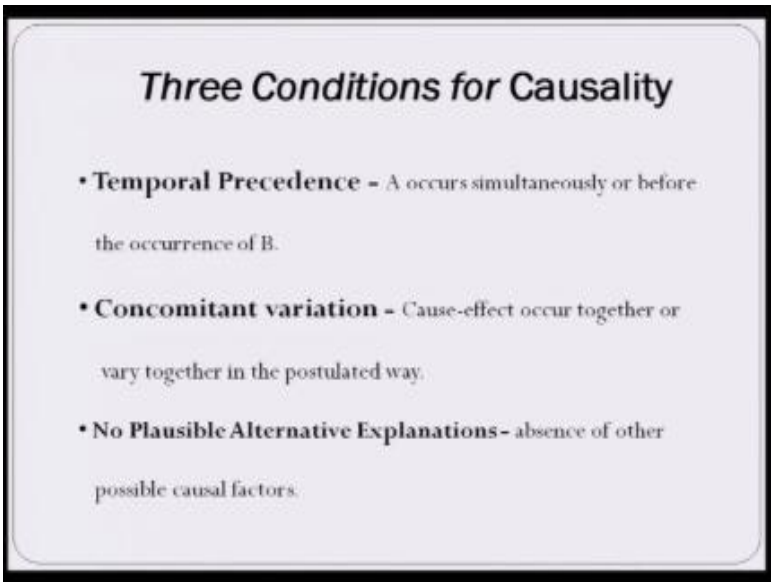

Dr. Shashi Shekhar Mishra: Concomitant variation that two basically will cause and effect will vary in a similar fashion as you have hypothesized and the third thing is that when you are looking at this relationship between A and B you have to basically eliminate or you have to control all other plausible alternative explanation, or all other possible causes of B and then only you can infer that A leads to B. So there are three conditions for causality.

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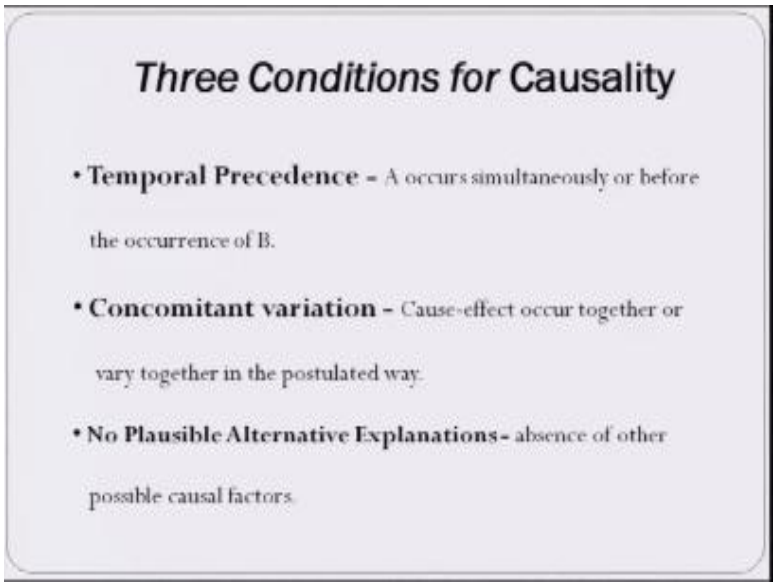

Dr. Shashi Shekhar Mishra: Temporal precedence, concomitant variation, and no plausible alternative explanation.

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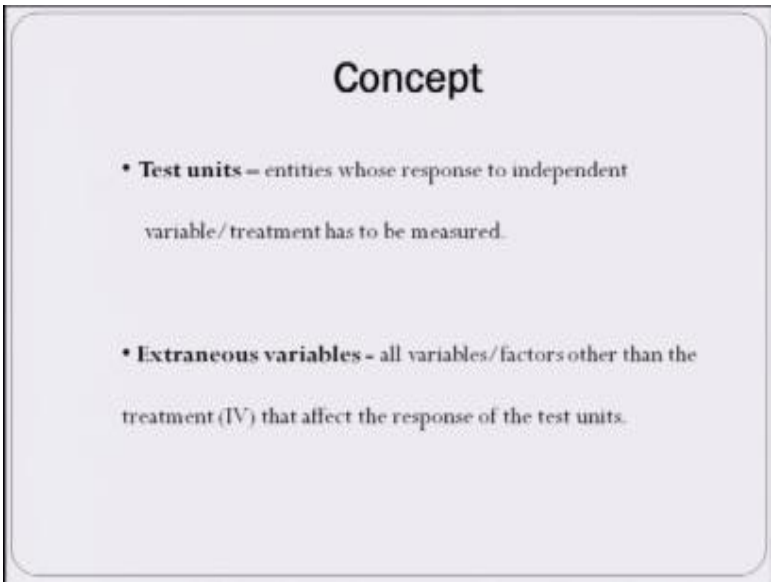

Dr. Shashi Shekhar Mishra: Then there are couple of concept when we try to understand the concept of causality is, they are I have already told you the independent variable that is the cause, the dependent variable which is the effect, then you have test units, entities.

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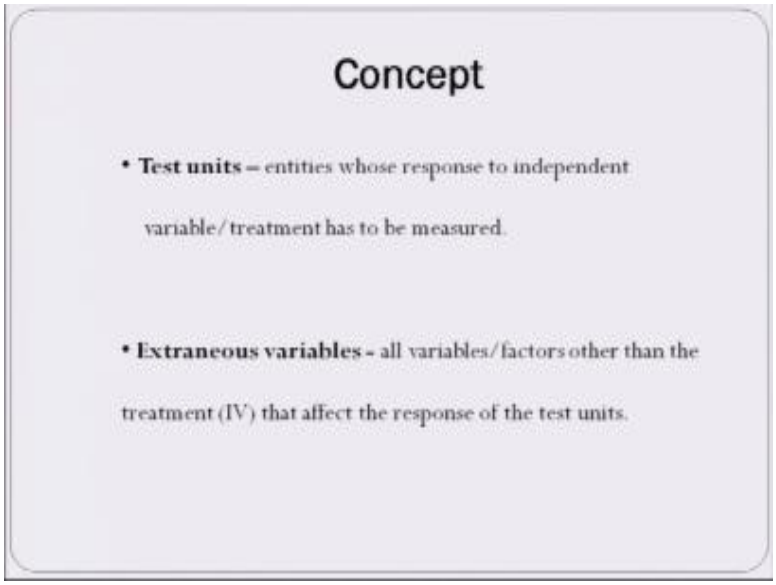

Dr. Shashi Shekhar Mishra: Whose response to independent variable or treatment has to be measured. So the test units are those objects on whom we try to understand how the, the treatment or the, the independent variable is exerting its influence, then you have extraneous variables all the variable factors other than the treatment independent variable that affect the response of the test unit. And to basically infer the causality you need to control the effect of extraneous variable.

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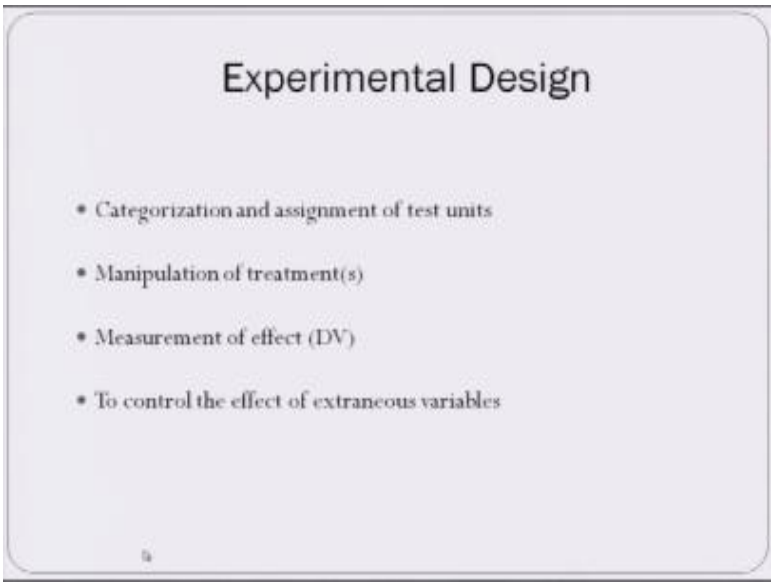

Dr. Shashi Shekhar Mishra: So in experimental design you will see that we are concerned with fourth ring that is categorization and assignment of test units. How do you basically subsample the test units in a homogeneous unit, and then how you assign these test units to the different treatments? So generally you will see that in the design of experiment or experimental design the independent variable is in the form of a categories, and are different levels of that independent variables and the test units are assigned to these different levels of the independent variable.

Then manipulation of the treatment or the independent variable, how basically this independent variable is varied or what are the different levels of this independent variables, then measurement of, if a measurement of a dependent variable, we will talk about the measurement and scaling issue in the second session of this week. So we will talk in detail about these things.

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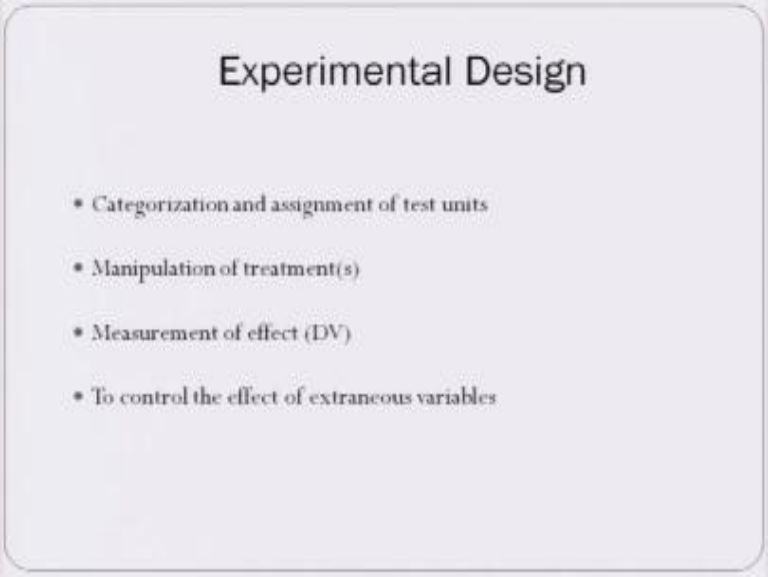

Dr. Shashi Shekhar Mishra: To and then the last thing in this design of experiment or experimental design is that to control the effect of extraneous variables.

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Dr. Shashi Shekhar Mishra: Now when we are talking about experimental design there are two concerns in the design of experiment is that there is internal validity and there is an external validity. Internal validity relates to that, that in an experiment all the basically.

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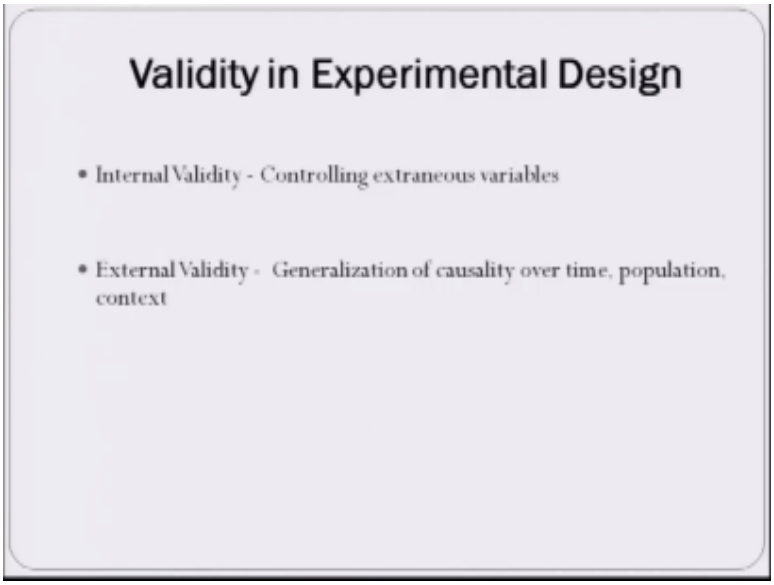

Dr. Shashi Shekhar Mishra: The effect of all the extraneous variable have been controlled and the external validity is that, to what extent the result of this experiment can be generalized, to what extent the causality can be generalized over the period of time, population, and the context. There are number of ways in which the experimental design, experiments can be designed, one however the one type which is most common in marketing researches a statistical design, and some of the benefits of this statistical designs.

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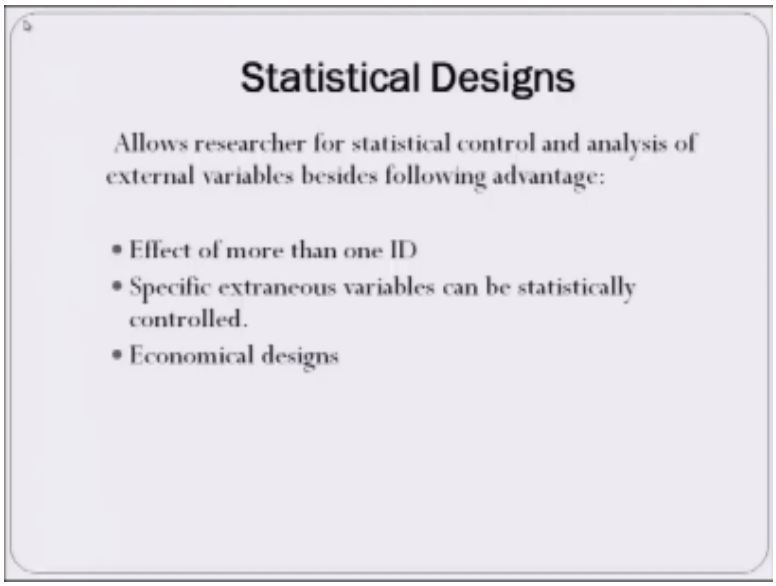

Dr. Shashi Shekhar Mishra: Are listed here, a statistical design basically allows you for a statistical control and analysis of external variables besides following advantage. So as you can see in the case of the very first example wherein I have talked to you about the growth in the roads in the Europe and the birth rate in the US you know, if we control the effect of economic growth then we will be able to find out that the two are actually not, or probably the growth in roads in the Europe is not causing the birth rate in the US. So from there we can infer that, that the there is no causality, so that kind of flexibility or that kind of additional thing that is being offered by the statistical design. There are some more benefits to this kind of statistical design that we can basically studying more than one independent variable or there we can study the effect of more than one independent variable through this statistical design of experiment.

We can also as I was telling that we can control the effect of extraneous variable then this, these designs are basically more economical where one test unit can be assigned for more than one treatment actually. So there are basically three types of this statistical design.

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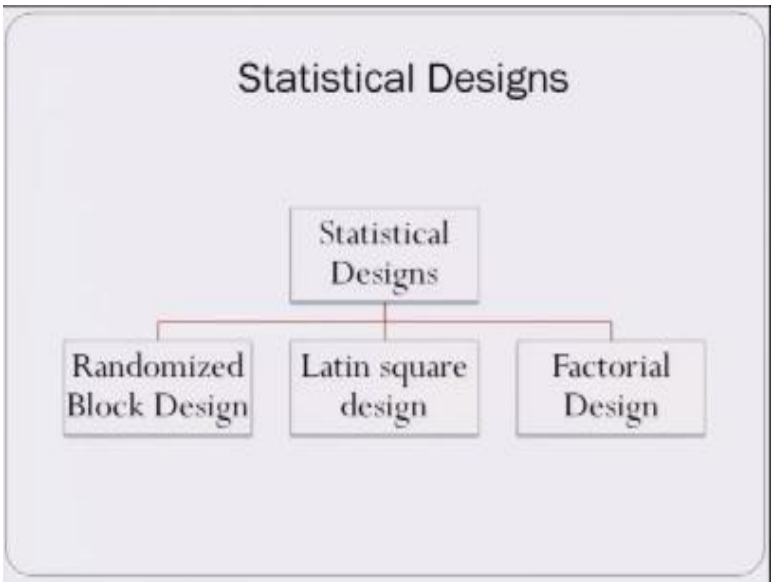

Dr. Shashi Shekhar Mishra: This is randomized block design, Latin square design, and the factorial design, look at basically the randomized block design.

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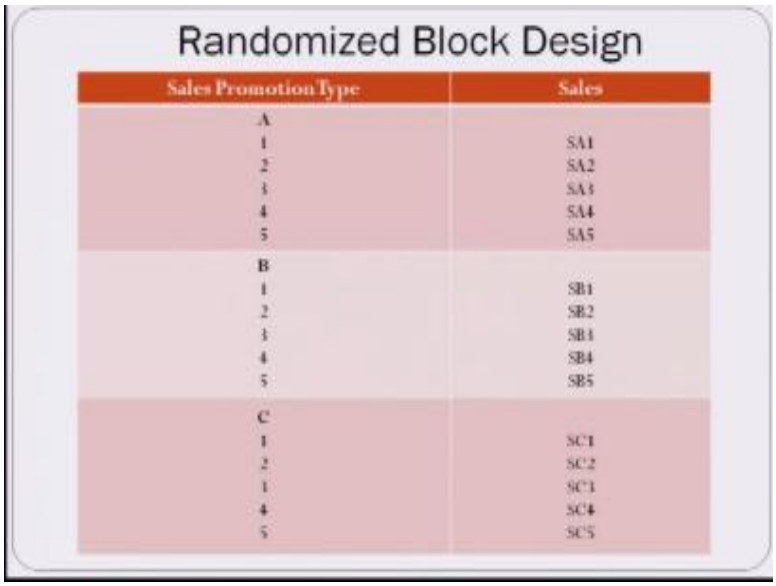

Dr. Shashi Shekhar Mishra: What happens inside the randomized block design is that this is one experiment where we are we are trying to understand different levels of the promotion or different types of sales promotion, how they affects the sales, that there are three types of sales promotion could be different in the nature of the extent of their promotion, that high, medium, or low, or different type of some other categorization of the sales promotion. Now you see that there are five test units assigned to basically each of these three levels of the sales promotion and the effect of sales that the dependent variables sales is being measured.

However you will see that, in this case it is important to understand.

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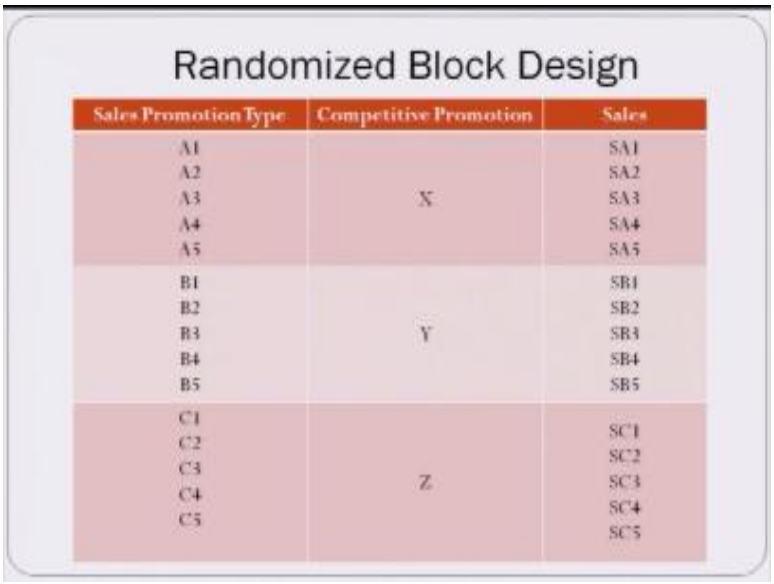

Dr. Shashi Shekhar Mishra: That when we are studying basically relationship it is important to understand that the level of the competitive promotion. So in this case an extraneous variable the competitive promotion has been controlled and you see the different levels of the corresponding to your level of sales promotion. Competitive or level of promotion has been measured at the time of the experiment and basically those are controlled. Now understand what is the exact role of the sales promotion on the overall sales removing the effect of the competitive promotion.

So you are able to basically control the effect of one extraneous variable through this randomized block design, which affects the dependent variable.

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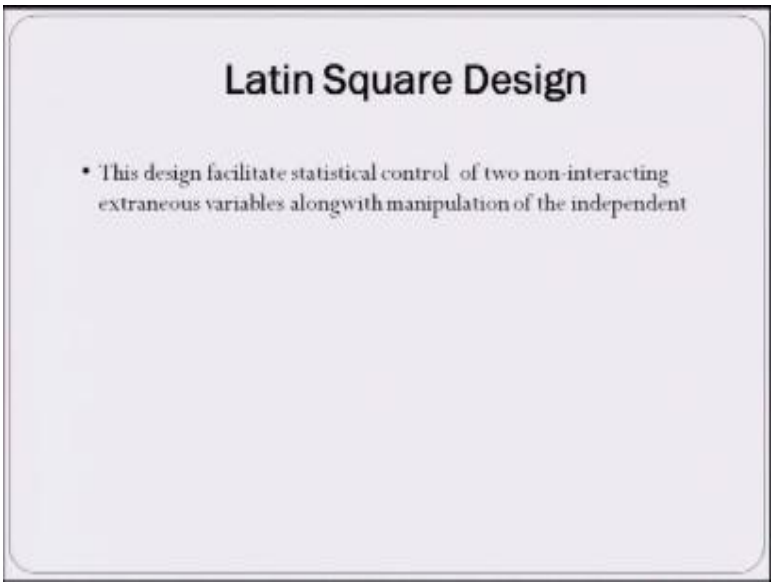

Dr. Shashi Shekhar Mishra: Then you have another type of experimental design which is a statistical design which is a Latin square design. There is this design facilitates statistical control of two non interacting extraneous variables. You can control the effect of or you can study the effect of independent variable or the dependent variable by controlling the effect of two non interacting extraneous variable. However, in this design of Latin square experiment you will see that, that the levels of each of this extraneous variable and the level of independent variable, then manipulation levels or the number of categories in the manipulation have to be same across extraneous variable as well as independent variables, so division of all variables

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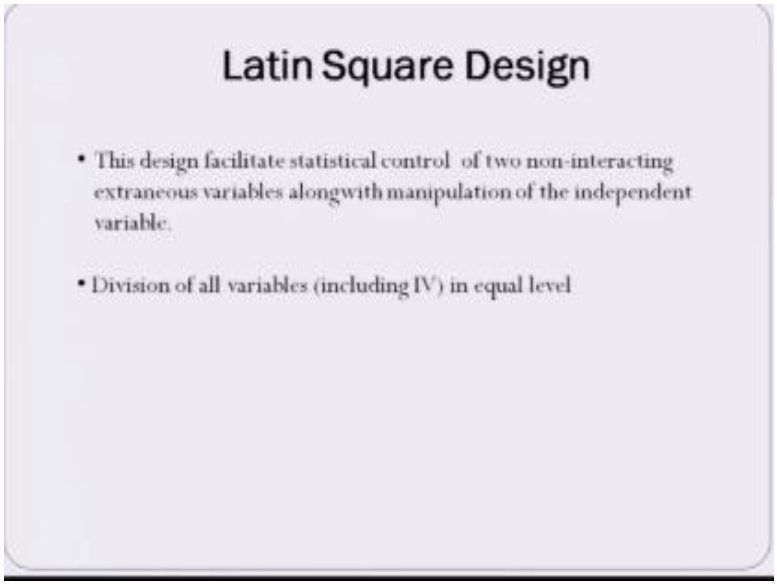

Dr. Shashi Shekhar Mishra: In equal level is required

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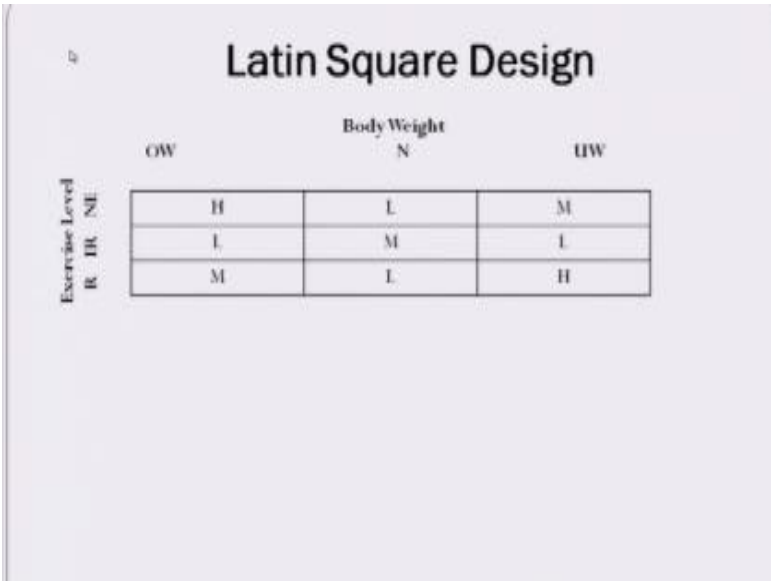

Dr. Shashi Shekhar Mishra: In this Latin square design, now this is basically one example of Latin square design where you see you have two extraneous variable

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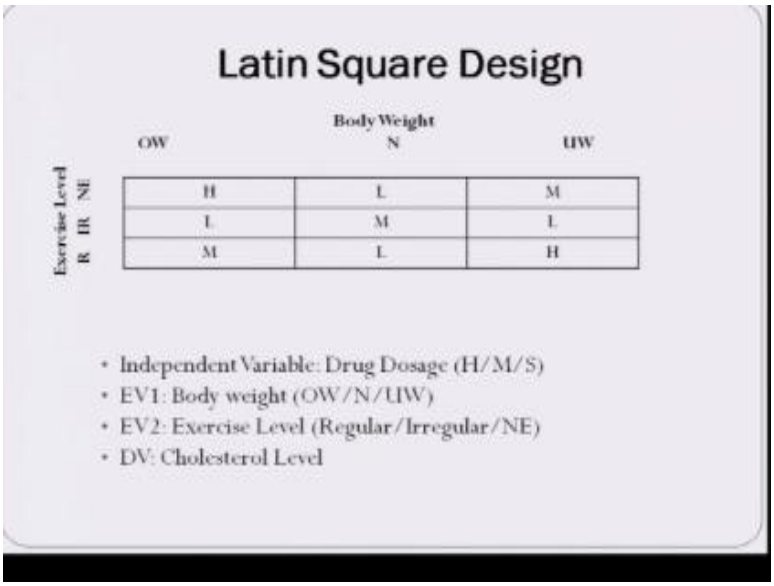

Dr Shashi Shekhar Mishra: What we are trying to study, our researcher is trying to study the effect of one drug doses, the different level of doses of a drug, a new drug, how it affects the cholesterol level in a patient, however there are two variables that he needs to control here, from the pass such as he understand that as the body weight changes body weight has an effect on this cholesterol levels. And the amount of exercise that a person does also have an effect on the cholesterol level.

So you will see that there are there are two extremist variable, bodyweight and exercise level, the body weight has been divided into three categories, overweight, normal, and underweight and this is based on the BMI data. Then you have the second variable that is exercise level, whether a person does exercise on a regular basis or he is irregular but he does exercise and then there is a third level where a person does not indulge into this exercise which are recommended to them.

Based on this you will see that you have three by three metrics corresponding to these extraneous variable and in that three by three metrics you have to assign the independent variable in a manner so that across any row or across any column there should not be a repetition of the, a particular level of the, this independent variable. So from there as you can see from this example

you will understand that each of these variables, independent variable and the extraneous variable all of them have to be, should consist of equal number of the categories inside them.

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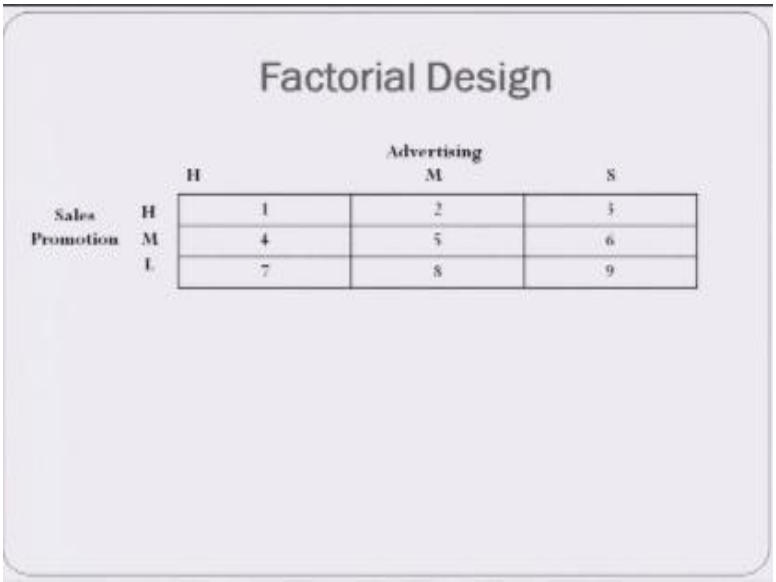

Dr. Shashi Shekhar Mishra; Then the third level of experimental, aesthetical experimental design is a factorial design in which is very common in marketing research and it is of very high use in the marketing research. What happens is you can study the effect of more than one independent variable on the dependent variable and what happens inside this factorial design is besides understanding the effect of independent variable on the dependent variable you can also understand what is the interaction effect of the two independent variable on the dependent variable, like from the way this interaction comes into the picture you can understand.

That I may like coffee and I generally prefer liquid in the form of cold but it is possible when it comes to the cold coffee I may not prefer cold coffee, I may prefer a coffee in the hot form, so from there you see that changes in the pattern of the consumer that the interaction comes into the picture and from the here you can see that corresponding

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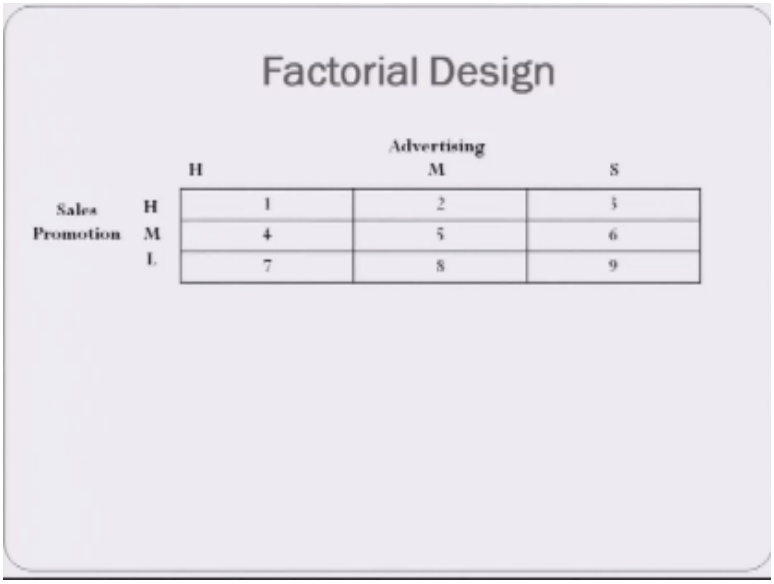

Dr. Shashi Shekher Mishra: To the different independent variable there are possibility of interaction among the, these independent variable. As you can see in this example basically this is a three by three via factorial design where you have two variable sales promotion which has three level, high, medium, and low and advertising could be in the form of very high levels of advertising or medium level or a small, or it could be the different types of the ad based on the content of the ad, it could be type of humor based advertising, it could be basically information based advertising, it could be a visualization or basically more of a picture based advertising.

So you see there are different types of advertising format which are possible and you want to understand the effect of this variation or the effect of these marketing mix variable on the sales of a company then you can use this pictorial design. As you can see that not only you can basically understand the effect of individually the effect of sales promotion on the sales and the type of advertising on the sales, the sales, you can also understand the interactive effect of sales promotion and advertising, and that interaction effect is sometimes very important that allow you to understand that which type of marketing mix is basically current or which type of marketing mix is not basically gelling well among themselves

So if a certain kind of sales promotion does not go well with a certain kind of type of advertising then you should not use that in your marketing mix part. So one of the most important aspect of this experimental design wherever it is being applied in the marketing is a test marketing area where it is being used for mainly for, mainly for two purposes

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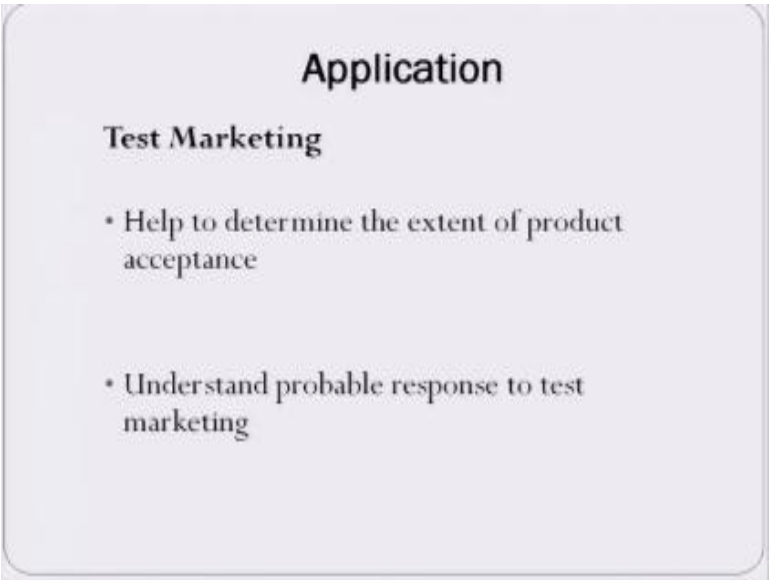

Dr. Shashi Shekhar Mishra: Experiment designer is used to understand, help to determine the extent of product acceptance, so you see instead of launching a product into the whole market you launch a product only certain geography or in a certain part of that overall market, and generally it is recommended that the size of this test market should be at least 2 percent of the total market so it should be representative of the whole market, and it should also be qualitatively it should be also be the representative of the target market in the sense it should represent the same kind of demographic in its, it should replicate all other variables pertaining to the target market. Now when you basically

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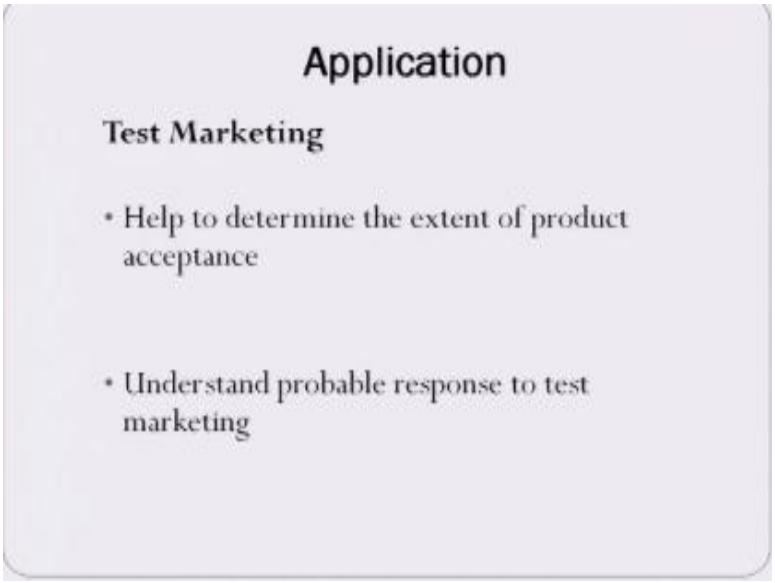

Dr. Shashi Shekhar Mishra: Test a product in this kind of scenario what happens is it helps you to understand the extent of product acceptance and also help you understanding the response with respect to test marketing or with respect to your marketing mix. So you are able to design your marketing programs and marketing mix that will suits to the target market. So this was basically the design of the experiment and causality part, causal research, when we will meet in the next class we will talk about other type of research design that is descriptive, survey-based research design, before that we will also look into this measurement and scaling part of marketing research. Thank you very much for this session, we will meet in the next session.

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